Impact of Organic Amendments on Soil Carbon Sequestration

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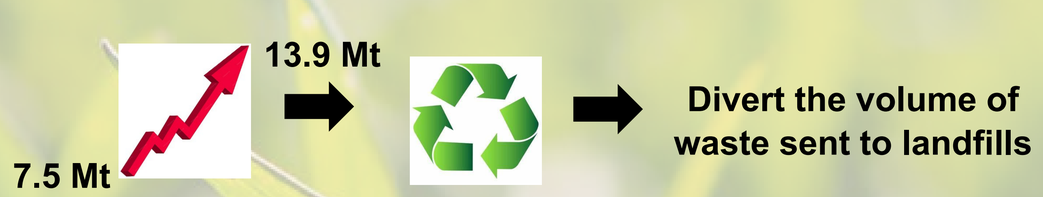
Background

- Many cropping regions in Australia have **critically low levels of soil organic carbon (SOC)**
- Rebuilding SOC is vital for long-term soil health and sustainable farming
- **Organic amendments (OAs)** help by storing C, reducing chemical runoff, improving soil microbial activity, boosting crop productivity, lowering fertiliser costs and ensuring safer food production
- SOC includes different types of carbon, from **stable** forms to **labile** (more active) forms
- The **labile fraction** is especially important because it fuels soil microbes and enhances nutrient availability for plants

Research Interest

- Australia is increasingly turning to organic fertilisers due to rising consumer demand for organic food and national sustainability goals
- Around **7.5 million tonnes** of organic waste are recycled into OAs each year
- The sector faces challenges, including a **lack of standards**, which makes it difficult to compare products and understand price differences
- **Scientific research** is needed to understand how these products interact with soil, helping to assess their **quality and effectiveness**

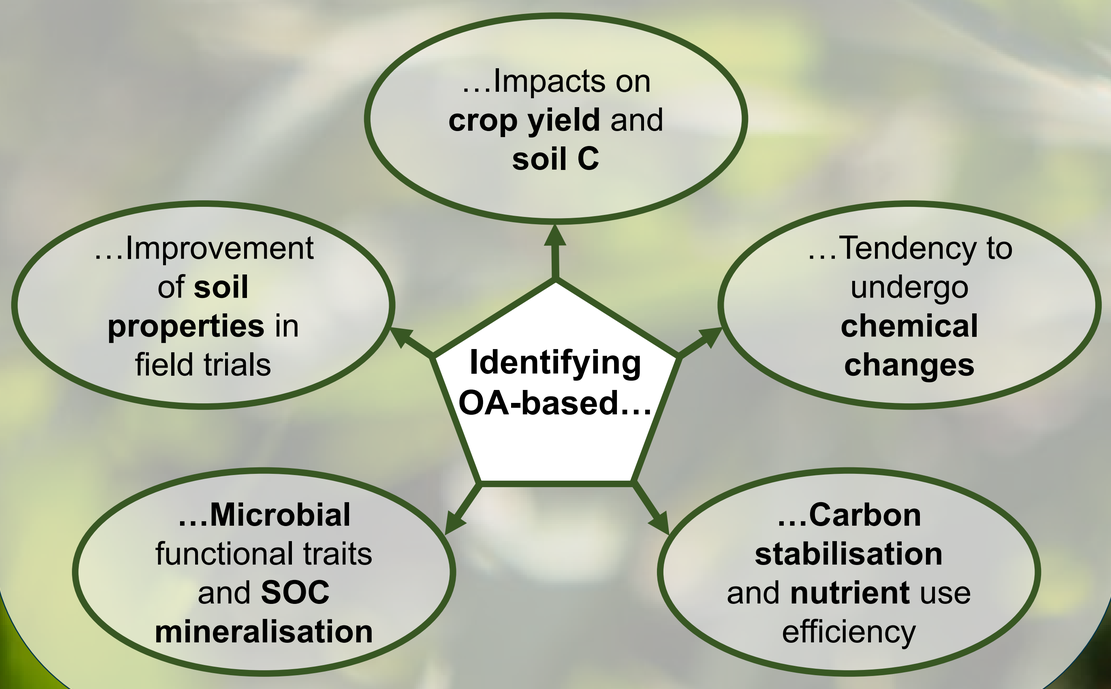


Growth of the organic recycling industry in future

Approach

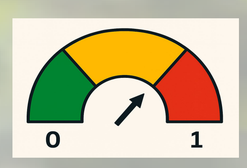
- **OAs** vary in carbon and nutrient profiles, and their effect on SOC dynamics depends on **chemical composition**, **soil type**, and **climate**

What am I working on?



Outcome

- Identification of key factors that contribute to OAs decomposition
- Develop a **Lability Index** that serves as a quantitative measure of the potential for OAs to undergo chemical changes during decomposition



End users

Organic fertiliser producers: Improve product quality

Farmers: Select the right source of OAs, reduce fertiliser cost

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